

Importance of language in science education

[Education](#), [Importance of Education](#)



Mauritius has lately seen a decline in the number of students opting for science. According to the Mauritius Research Council (2004) “ increasingly science is becoming less popular in schools. Furthermore, less than 30% of the pupils doing school certificate will opt for science”. There are many reasons for this. The science subjects are often considered to be difficult and there is a perceived lack of job opportunities. The low ratio of scientist to population in Mauritius does not augur well for the future. There is a need to produce a critical mass of broad based and specialized scientists during the coming decades to facilitate the emergence of the knowledge economy to serve the region (Education strategic plan, 114).

This chapter attempts to shed some light on the occurrence of the decline of popularity of science subjects and the situation in Mauritius. This introductory chapter also discusses the reasons behind my choice for the research focus, aims and sub questions.

1. 1. Education in Mauritius

“ Education encompasses teaching and learning specific skills and something less tangible but more profound: the imparting of knowledge, good judgment and wisdom”. (Rughooputh, 2005, p. 2). Moving from a mono-crop based economy to a more diverse and complex economic structure which is spreading its reach towards the service sector, Mauritius is now one of the leading nations in terms of economic growth in the African and Indian Ocean region. If Mauritius aims at becoming a globally competitive nation, it is critical that the country “ shores up its capacity in Tertiary Education, in Science, Technology and Innovation (STI) and in human resources generally” (Budget Speech, 2008-2009, p. 11.).

Education is vital to a nation addressing human development, satisfying employment and in setting the pace for social mobility. It is also of crucial importance in providing a highly skilled labor force as per the economic requirements of the challenges of time.

(Rughooputh, 2000 , pp 1-17)

The ultimate objective of any educational enterprise is to improve student achievement so that individuals may fulfil their personal aspirations and become contributing members of society. Improving student achievement and attaining excellence is hard. According to Classen (1999) it is by equipping children with knowledge, skills and attitudes that we can ensure that they become full fledged citizens and self directed life long learners who can co-exist in a world characterized by diversity and pluralism.

1. 2 Importance and role of Science education

Recent studies on the status of science and technology in Mauritius, focusing on the education sector, show that science as a subject is becoming increasingly less attractive to pupils, as is the case in many countries across the world. (Suddhoo, 2003).

Our current lacking in science could have implications on the quality of our human resource, particularly within the context of the vision of transforming the country into a Cyber island. There needs to be a complete review of the teaching and learning of science in schools. The current state of affairs is already leading to pupils and students shying away from science for many reasons varying from science to be perceived as a difficult subject to the lack

of career opportunities for those opting for scientific subjects. (Education strategic plan., 2008-2020, p. 62).

1. 3. Importance of language in science education

Reasoning and argument, so essential to communication in science, proceed in words. The more contentious the argument, the simpler and more charged the words (Hoffmann, 1988).

The choice of the language of instruction used in school is of utmost importance. This is an issue that needs attention in Mauritius especially in view of its specificity and also the socio-economically disadvantaged areas where both family and community exposure to the English language (the ‘ official’ language of instruction – and assessment – in schools) is limited. (Education Strategic plan., 2008-2020, p. 38).

The use of English in examinations is not going to change in the near future though in the new education strategic plan proposed by the current education minister there was mention for a need of broad based national consultation concerning the change of the ‘ official’ language of instruction and assessment. (Education Strategic plan., 2008-2020, p 38). The use of the language of instruction used in schools is of utmost importance to ensure that all the students learn effectively. Mauritian children have a great resource- bilingualism and sometimes even trilingualism. However, this causes some problems in schools. For example, there is quite a lot of Creole interference in classes especially for low ability students

1. 4 Professional context and research focus

Our island has a highly diverse population. The official language is English whereas the vernacular language is Creole. According to the latest census (2000) Creole is spoken and used in daily interactions by 80.5% of the population, and English is spoken and used in daily interactions by less than 1% of the population. Students entering the secondary schools therefore, come from a Creole-speaking environment and English is the language of instruction in schools is English.

My concern is that the quality of results is poor. As an educator, I have the interests of my pupils at heart. From discussions with my own students and colleagues, one prominent issue stuck out. Students have difficulties with the medium of language (that is English). According to the latest census (2000), English – although it is the ‘official’ language of the state (and thus, the official language of instruction in schools) is spoken and used in daily interactions by less than 1% of the population. There is a major problem in the writing, reading and understanding the language of biology and consequently the pupils do not manage to reach the adequate level of scientific literacy. This is mainly because at the heart of science is a language concept: asking and answering questions.

It is argued that language plays an active role in the development of scientific ideas (Ford and Peat., 1988, p. 12). There is a need therefore to investigate, to see how much language is a barrier to successful studies in science. There is moreover, a need to explore how low language efficiency affects the understanding and performance of students. I intend to explore

different teaching strategies and I believe that it will help me advance in professional knowledge.

Our current lacking in science could have implications on the quality of our human resource, particularly within the context of the vision of transforming the country into a Cyber island. There needs to be a complete review of the teaching and learning of science in schools. The current state of affairs is already leading to pupils and students shying away from science for many reasons varying from science to be perceived as a difficult subject to the lack of career opportunities for those opting for scientific subjects. (Education strategic plan., 2008-2020, p. 62). The current disaffection for scientific disciplines, coupled with the need to open the minds of children to observation, deductive reasoning, teamwork, free thinking and universal truths leaves us no choice but to rethink the way we teach science to children, if we want them to enjoy learning and to think both imaginatively and rationally.

In the Mauritian Education system, it is a fact that we are bilingual, and that most of the classes and exams(the exception being French obviously) at the primary, secondary and tertiary level are conducted in English. There is a major interference of Creole in the language used and written by pupils.

Stress on “ proper English” can inhibit many children from expressing themselves in the kind of language they use at home, while “ learning” for all too many students means guessing what answers the teacher expects.

It is a simple truth that teachers communicate both information and values to their students, and do so almost exclusively through language. It is based on research using transcripts of actual lessons to show how questions demanding factual (rather than reasoned) answers are used-if not overused-in arts subjects, and how science teachers can learn to avoid vocabulary, which is too abstract or technical.

(Barnes et al, 1989, pp. 5-6)

It therefore seems that language that we are using in class to teach is of great importance. From my three years teaching experience one major problem I have encountered in my biology classes is the pupils have inadequate language proficiency(English in our context) to be able to write their answers correctly and sometimes even in understanding the questions set. I need to improve their language efficiency and consequently their biology proficiency.

Language learning is not a simple linear process, but involves the ongoing development of skills for a range of purposes. This development is largely the result of the social contexts and interactions in which learning occurs. By focusing on the ways in which teachers can “ scaffold” language and learning in the content areas, one can take a holistic approach-one that appreciates the struggle of students learning a new language, while simultaneously developing subject knowledge in it, and the challenge for teachers to address these needs(Gibbons, 2002, p. 3).

As an educator, I sincerely wish to be able to create capable, confident biology students who are effective communicators through oral and written language. They should be able to make informed decisions for themselves especially in a scientific way and to contribute wisely to the society and nation at large. According to Yore et al., (1995) the acquisition of both language literacy and science literacy is dependent on the students' ability to think critically in similar ways. They also assert that the reading process corresponds to the process of scientific inquiry. Both require skills in setting purposes, questioning, predicting, analyzing evidence and drawing conclusions, and communicating results.

Many children find science to be an interesting subject. We have to develop ways to make students enjoy science content, and develop their thinking and literacy skills during different activities. Research has shown that, reading and writing about science help develop and reinforce desired science concepts (Yore, 2003; Palincsar & Magnussen, 2001; Thier, 2002). Upon examination, it is clear that scientific literacy and language literacy have much in common (Alvermann, 2004; Baker, 2004; Casteel & Isom, 1994). They work together in strengthening skills and strategies in both curricular areas. As Marlene Thier (2002) explains, " Good science-and effective teaching and learning in science-is dependent upon strong language skills. Indeed, science and language are inextricably linked in the pursuit, determination and communication of meaning in the context of the physical world"(Ogle and Mckee., 2005, p1)

That is why the research focus I am planning to carry out is an action research

1. 4. 1Sub-questions:

What is the current language literacy of my form 3 students?

What aspects of language should I deal with as a science educator?

Why there is a need to take remedial action change concerning language in biology teaching and learning?

How can I improve students' performance at my school in biology?

Aims:

I want to know how my form 3 students perceive biology and what they believe to be the major obstacles in order to succeed with good grades.

At the end of the dissertation, I want to show that one problem that I face in biology teaching can be diminished through different teaching and learning styles.

Furthermore, an important outcome of biology teaching is to improve their writing. Therefore, through various activities I want to develop that.

The purpose of my study is:

To improve my teaching capacities.

To increase performance of biology students at my school through different activities.

To develop an appreciation of biology in my students.

To diminish the incidence of language being a major barrier to the successful and efficient learning of the subject.